WHAT IS CLAIMED IS:

1. A shift pressure control apparatus for controlling a shift pressure to perform a shift in an automatic transmission, the shift pressure control apparatus comprising:

a controller

to determine a starting input-torque-dependent pressure from a transmission input torque at a start of a shift;

to hold the shift pressure at the starting input-torque-dependent pressure during the shift;

to monitor an operating parameter representing an engine load of an engine connected with the automatic transmission, to detect an engine load change; and

to modify the shift pressure to a modified pressure determined by modifying the starting input-torque-dependent pressure with a difference between a second engine-load-dependent pressure determined from the engine load after the engine load change and a first engine-load-dependent pressure determined from the engine load at the start of the shift when the engine load change is detected.

2. The shift pressure control apparatus as claimed in Claim 1, wherein the controller is configured to detect the engine load change when a change in the operating parameter representing the engine load is greater than or equal to a predetermined value.

3. The shift pressure control apparatus as claimed in Claim 1, wherein the controller is configured to modify the shift pressure to the modified pressure determined by adding the difference between the second engine-load-dependent pressure and the first engine-load-dependent pressure, to the starting input-torque-dependent pressure.

4. The shift pressure control apparatus as claimed in Claim 1, wherein the controller is configured to detect the start of the shift; to store a value of the operating parameter and a value of the engine input torque at the time of detection of the start of the shift; to determine the starting input-torque-dependent pressure from the value of the engine input torque stored upon detection of the start of the shift, to hold the shift pressure equal to the starting input-torque-dependent pressure; to detect the engine load change during the shift; to store a value of the operating parameter at the time of detection of the engine load change; and to vary the shift pressure from the starting input-torque-dependent pressure to the modified pressure which is set equal to a sum of the starting input-torque-dependent pressure and the difference between the second engine-load-dependent pressure and the first engine-load-dependent pressure.

5. The shift pressure control apparatus as claimed in Claim 1, wherein the shift pressure control apparatus further comprises a throttle sensor to sense a throttle opening of a throttle valve for the engine, and the

operating parameter is the throttle opening sensed by the throttle sensor.

6. The shift pressure control apparatus as claimed in Claim 1, wherein the controller is configured to determine the starting input-torque-dependent pressure from the transmission input torque at the start of the shift, according to a pressure-torque characteristic of a desired input-torque-dependent fluid pressure with respect to the transmission input torque; and wherein the desired input-torque-dependent fluid pressure of the pressure-torque characteristic increases as the transmission input torque increases.

7. The shift pressure control apparatus as claimed in Claim 1, wherein the controller is configured to determine the first engine-load-dependent pressure from the operating parameter representing the engine load at the start of the shift, and the second engine-load-dependent pressure from the operating parameter representing the engine load after the engine load change, by using a pressure-load characteristic of a desired engine-load-dependent fluid pressure with respect to the operating parameter.

8. The shift pressure control apparatus as claimed in Claim 7, wherein the desired engine-load-dependent fluid pressure of the pressure-load characteristic increases as the engine load increases.

9. The shift pressure control apparatus as claimed in Claim 1, wherein the controller is configured to determine the first engine-load-dependent pressure from the operating parameter representing the engine load at the start of the shift, and the second engine-load-dependent pressure from the operating parameter representing the engine load after the engine load change, by using a pressure-load characteristic of a desired engine-load-dependent fluid pressure with respect to the operating parameter, set to restrain a shift shock in the transmission.

10. A shift pressure control process for controlling a shift pressure to perform a shift in an automatic transmission, the shift pressure control process comprising:

determining a starting input-torque-dependent pressure from a transmission input torque at a start of a shift;

holding the shift pressure at the starting input-torque-dependent pressure during the shift;

monitoring an operating parameter representing an engine load of an engine connected with the automatic transmission, to detect an engine load change; and

modifying the shift pressure to a modified pressure determined by modifying the starting input-torque-dependent pressure with a difference between a second engine-load-dependent pressure determined from the engine load after the engine load change and a first engine-load-dependent pressure determined from the engine load at the start of the shift when the engine load change is detected.

11. The shift pressure control process as claimed in Claim 10, wherein the shift pressure control process further comprises

detecting the start of the shift;

storing a value of the operating parameter, as the engine load at the start of the shift and a value of the engine input torque, as the transmission input torque at the start of the shift, upon detection of the start of the shift;

detecting the engine load change during the shift;

storing a value of the operating parameter, as the engine load after the engine load change, upon detection of the engine load change; and

adding the difference between the second engine-load-dependent pressure and the first engine-load-dependent pressure, to the starting input-torque-dependent pressure.